

Where Surveyed Radio Listeners Actually Are
North Carolina and Virginia Stations

Table 4

	Total Listeners			Listeners Inside 60 dBu Contour						Listeners Outside 60 dBu Contour					
	Spring 1998	Fall 1998	Average 1998	Spring 1998	Percentage	Fall 1998	Percentage	Average 1998	Percentage	Spring 1998	Percentage	Fall 1998	Percentage	Average 1998	Percentage
WCCG(FM) Hope Mills, North Carolina	14337	14749	14543	10360	72.26%	12642	85.71%	11501	79.08%	3977	27.74%	2107	14.29%	3042	20.92%
WKRX(FM) Roxboro, North Carolina	4490	4260	4375	3592	80.00%	3408	80.00%	3500	80.00%	898	20.00%	852	20.00%	875	20.00%
WCZI(FM) Washington, North Carolina	9440	17442	13441	1475	15.63%	2142	12.28%	1809	13.46%	7965	84.38%	15300	87.72%	11633	86.54%
WZZI(FM) Buffalo Gap, Virginia	3408	5125	4267	1065	31.25%	2050	40.00%	1558	36.51%	2343	68.75%	3075	60.00%	2709	63.49%
WQMZ(FM) Charlottesville, Virginia	23850	27225	25538	18550	77.78%	23925	87.88%	21238	83.16%	5300	22.22%	3300	12.12%	4300	16.84%
WXGM(FM) Gloucester, Virginia	12546	16170	14358	9758	77.78%	12495	77.27%	11127	77.49%	2788	22.22%	3675	22.73%	3232	22.51%
WJRV(FM) Richmond, Virginia	80006	38412	59209	72666	90.83%	32076	83.51%	52371	88.45%	7340	9.17%	6336	16.49%	6838	11.55%
													Total	32628	
															Average 34.55%
													Average	65.45%	

but, crucially, where a station's actual, surveyed listeners are located.⁵⁵

The results presented numerically in Table 4 and exhibited visually in the contour maps are striking. Across the seven stations, on average, more than 34.5% of the stations' surveyed radio listeners are actually located outside the stations' protected 60 dBu contours. This represents a total of 32,628 listeners for just these seven small Class A stations. In the case of WCZI(FM), Washington, North Carolina, more than 86.5% of the station's surveyed listeners, some 11,633 individuals, are located outside the station's 60 dBu contour, and in the case of WZXI(FM), Buffalo Gap, Virginia, nearly 63.5% of the station's surveyed listeners are located outside the station's protected contour.⁵⁶

Moreover, nearly all of the stations have *actual listeners all the way out to the stations' 34 dBu contours*. This is graphically demonstrated by the maps for four of the stations—WCZI, WZXI, WQMZ(FM), Charlottesville, Virginia, and WXGM(FM), Gloucester, Virginia. In the case of two other stations—WCCG(FM), Hope Mills, North Carolina, and WJRV(FM), Richmond, Virginia—the Arbitron data establish surveyed listenership in the vicinity of the 34 dBu contours,

⁵⁵ A discussion of the methodology by which Table 4 and the contour maps in Exhibit 5 were created, with additional notes, is provided in Exhibit 4.

It is important to recognize that the maps also show the likely range of each station's listening audience. In other words, just because a particular zip code area is not colored does not mean that the station has no listeners in that zip code; instead, it simply means that, for the Spring and Fall 1998 ratings periods, Arbitron did not receive any diaries from that zip code indicating that a diarist listened to the station.

⁵⁶ These high numbers are not an artifact of listeners merely commuting in from their homes on the outskirts of the station's service area to the population center where the station is located, for the largest population centers—Greenville, Havelock, Kinston, and New Bern, North Carolina, in the case of WCZI, and Harrisonburg, Virginia, in the case of WZXI—are all located outside the stations' protected 60 dBu contours to begin with.

but, due to the scale of the maps, the reported zip code areas do not appear.⁵⁷ Finally, even the map of WKRX(FM), Roxboro, North Carolina, shows actual listeners out to the station's 40 dBu contour.

Were the Commission, therefore, to jettison second and third adjacent channel interference protections for its LPFM proposals, it would be jettisoning much important *documented* service provided by existing full power broadcasters and doing precisely what it has repeatedly stated it would not do. Indeed, just recently the Commission reiterated that "we have no intention of relaxing second-adjacent-channel and third-adjacent channel spacing requirements as allotment and application criteria."⁵⁸ The results contained in Table 4 and the contour maps provided in Exhibit 5 demonstrate empirically that real, actual service—and not merely theoretical service—will be jeopardized by any reduction in the current interference protection standards.

Where second or third adjacent channel interference is involved, the interference occurs within an area around the interfering station's transmitter, and the effect is to replace the desired station's service with the interfering station's signal. The Commission has long recognized that, while a *single* application may involve "some small amount of interference to an existing station, but not enough to justify denial of the application on this ground; . . . the total effect upon the service of the existing station from a series of such grants may be significant."⁵⁹ In fact, the Commission has acknowledged the merit in avoiding, through the process of repeatedly eating away at an existing

⁵⁷ The Arbitron data show surveyed listeners of WCCG in Wake County, North Carolina, and surveyed listeners of WJRV in Buckingham County, Virginia. See Exhibit 6.

⁵⁸ *Grandfathered Short-Spaced FM Stations*, Report and Order, FCC 97-276 (released Aug. 8, 1997), at ¶ 25.

⁵⁹ *Revision of FM Broadcast Rules*, Notice of Inquiry, Notice of Proposed Rule Making, and Memorandum Opinion and Order, FCC 61-833, 21 Rad. Reg. (P&F) 1655 (1961), at ¶ 17; see also *id.* at ¶ 17 n.7 (observing that the effect of a series of authorizations involving second or third adjacent channel interference to an existing station's service may be significant).

station's service by authorizing second or third adjacent channel interference, the creation of "a sort of 'Swiss cheese' coverage pattern for the original station, [i.e.,] a large service area with numerous 'holes' caused by this type of interference around the transmitters of the interfering stations" and the concomitant "deterioration of service, through the assignment of a number of stations the total impact of which upon an existing station is substantial."⁶⁰ The Commission's current LPFM proposals would create just such a "Swiss cheese" coverage pattern for existing broadcasters on a massive scale. Were LPFM stations maximally packed in, existing full power stations could lose—based on the results discussed above—as many as one third of their existing, surveyed listeners. This actual loss of proven service cannot be in the public interest.

C. The Commission's Proposals Could Destroy Radio Reading Services for the Blind and Other Subcarrier Services

Elimination of second and third adjacent channel interference protections, rather than increasing spectrum efficiency by adding a vast number of new stations, would actually decrease spectrum efficiency by possibly destroying existing FM subcarrier services. In addition to the programming FM stations present on their main channel, all existing FM stations have the capacity to program two or more subcarriers on a multiplex basis.⁶¹ Typically, one of these subcarriers is used to provide the second signal needed for stereo operation. Although some stations use their subcarriers for non-broadcast related services such as paging, many broadcasters make their subcarrier channels available for important broadcast-related secondary services such as radio

⁶⁰ *Id.* at ¶ 45.

⁶¹ See 47 C.F.R. §§ 73.293, 73.295; *FM Subsidiary Communications Authorizations*, First Report and Order, FCC 83-154, 53 Rad. Reg. 2d (P & F) 1519 (1983); *Commercial Use of NCE FM SCAs*, Report and Order, FCC 83-155, 54 Rad. Reg. 2d (P & F) 25 (1983).

reading services, foreign language programming, various informational and instructional programming, and functional (background) music (such as Muzak).

Of these subcarrier services, many specialized groups, most notably the visually-impaired and immigrant and ethnic groups, rely especially on the radio reading services and foreign language programming that are provided on FM subcarriers. Radio reading services, for example, provide a vital link to important news and information for millions of blind or reading-impaired Americans. Recent immigrants and other members of ethnic groups rely on subcarrier foreign language programming to foster their cultural heritage. Yet nowhere does the *Notice* even consider the repercussions that elimination of adjacent channel interference protections would have for these population groups.⁶² This lack of consideration is particularly striking, for, on the one hand, the Commission has previously sought to accommodate the needs of the handicapped wherever possible (e.g., closed-captioning, telecommunications services for the deaf),⁶³ and, on the other hand, foreign language programming is precisely the sort of niche narrowcasting that the *Notice* seems to contemplate. Unfortunately, it could be said that LPFM would trade off radio reading services for the blind in order to appease radio pirates.

Elimination of second adjacent channel interference protection will devastate these important services as they now operate and offer nothing in return. Most FM broadcasters that utilize their

⁶² With regard to subcarriers, all the *Notice* contemplates is that LPFM operators “sacrifice the use of subcarriers in return for the ability to broadcast a narrow band radio signal.” *Notice* at ¶ 56.

⁶³ In fact, radio reading services for the blind are important enough that the Commission prohibits the remunerative use of an NCE-FM station’s subcarrier capabilities to the detriment of these services. *See* 47 C.F.R. § 73.593.

subcarriers operate them at 67 kHz and 92 kHz. Permissible emissions⁶⁴ from a second adjacent FM channel will interfere with these subchannels, as the accompanying diagram shows.⁶⁵ In fact, these subchannels are the most susceptible to increased interference. The signal-to-noise ratio ("S/N") of the 67 kHz subcarrier, relative to the main channel, is 36.4 dB, and the S/N ratio of the 92 kHz subcarrier is 36.2 dB.⁶⁶ In contrast, the S/N penalty for stereo operation is 23 dB. Thus, subcarrier transmissions are at least 13 dB (20 times) more sensitive than even stereo operation is, making the subcarrier transmissions very fragile.⁶⁷

The special, inexpensive receivers that listeners of these services use utilize a wide (300 kHz) filter.⁶⁸ While, if second, and possibly third, adjacent channel interference protection were eliminated, it may be possible to tighten the receiver's selectivity, the trade-off would be such a substantial amount of crosstalk that programming on the subchannel would become effectively

⁶⁴ See 47 C.F.R. § 73.317.

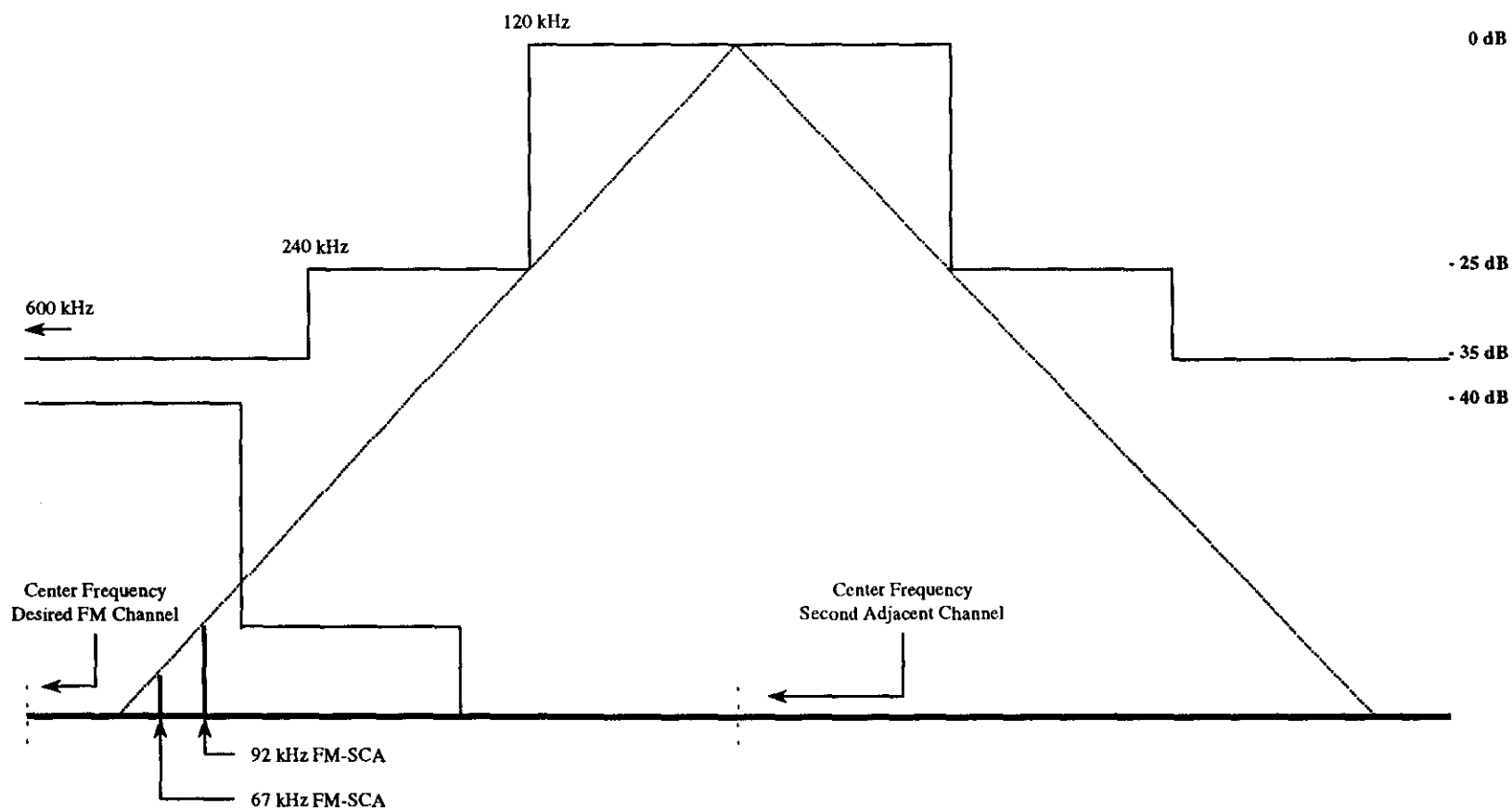
⁶⁵ The same is not true for IBOC DAB, which is designed to minimize any impact on existing subcarrier services. See USADR Petition for Rulemaking, RM-9395 (filed Oct. 7, 1998), at 30.

⁶⁶ These S/N ratios assume that the 67 kHz subcarrier has a 5 kHz deviation, the 92 kHz subcarrier has a 7 kHz deviation, there is -3 dB frequency of deemphasis in the main audio channel (2.12 kHz), there is -3 dB frequency of deemphasis in the SCA audio channel (1.06 kHz), and the injection level is 10%. These assumptions are typical for subcarrier transmissions. See John Kean, *Subcarrier Transmissions and Stereophonic Broadcasting*, in NAB ENGINEERING HANDBOOK 475, 493 (8th ed. 1992).

⁶⁷ In addition, subcarrier transmissions suffer from a six to ten times sensitivity loss compared to the main channel because the subcarrier modulates the main carrier at a maximum of 10%. See Jon GrosJean, *Radio Receivers*, in NAB ENGINEERING HANDBOOK 1139, 1145 (8th ed. 1992).

⁶⁸ An SCA receiver is really just an FM receiver with the stereo decoder replaced by a filter and the FM demodulator tuned to the desired subcarrier frequency.

Effect of Second Adjacent Channel Interference on Subcarrier Services



unlistenable. Even in the current environment, a subcarrier often sounds like changing to “weak stereo” after initially tuning in the subchannel as a “weak mono” signal. Subcarrier services, such as radio reading services and foreign language programming, simply cannot withstand any further degradation.

In addition, full power broadcasters who are struggling or marginal from an economic point of view are sometimes just able to continue to survive with the help of the small but needed financing they receive from use of their subcarriers. Loss of the income stream resulting from the unusability of the subcarrier frequencies due to interference could cause some struggling stations to fail altogether. Maintenance of the existing subcarrier relationship therefore helps preserve the full power service for which the license was originally granted, as well as preserve an avenue for the subcarrier services that are broadcast by that station.

New LPFM stations will not increase opportunities for those who wish to provide radio reading services or foreign language programming. Because of the low injection level of the subcarrier, it is necessary for those who broadcast by this means to use a subchannel of the most powerful station they can if they are to have any range at all. Thus, use of a subchannel of a Class C station is much more preferable than use of a subchannel of a Class A station. The service area for a radio reading service operating on a subchannel of a LP1000 station, let alone a LP100 or LP10 stations, would be negligible, even if second and third adjacent channel interference protections were maintained. At the same time, those who broadcast on subcarriers now are unlikely to be able to make use of even the main channel of a low power station. Most radio reading services operate on a shoestring budget and are staffed by volunteers; the cost of even a LP1000 station, the highest

power low power station, would be prohibitive.⁶⁹ Most foreign language programming on subcarriers occurs in large cities where there are substantial concentrations of foreign language speakers; yet, as the *Notice* makes clear, very few low power stations can be assigned to large cities.

Thus, elimination of adjacent channel interference protections for LPFM purposes will take away these vital secondary services and give nothing, to compensate for the loss, in return. Although it is difficult to quantify, NCAB and VAB believe that the loss of listenership, due to elimination of this interference protection, for full power stations, when combined with the loss of service for the millions of blind, reading-impaired, and foreign language-speaking individuals who rely on current subcarrier programming, far outstrips the new service that could possibly be provided by the Commission's LPFM proposals, especially since virtually none of the new LPFM stations would provide a first primary service to anybody. Such an extensive loss of existing service cannot possibly be in the public interest.

Finally, it is worth noting that adjacent channel interference with a station's subcarriers could affect the operation of a potential encoded EAS system. It is envisioned that an encoded EAS system will actually turn on a radio in the case of an emergency—with potentially life-saving effects. Encoded EAS would use a subcarrier. NCAB and VAB believe it is incumbent upon the Commission to determine the possibly deleterious effect the Commission's LPFM proposals could have on this enhancement to the EAS system before proceeding any further.

⁶⁹ The lower power LP100 and LP10 stations, while less expensive, possess a service area too small to reach the dispersed audience.

**D. The Commission Must Apply Its Technical Standards Uniformly,
Including Third Adjacent Channel Interference Protection**

Even were the Commission to maintain second adjacent channel interference protection and eliminate only third adjacent channel interference protection for its LPFM purposes, existing service for many listeners would be lost. In particular, third adjacent channel interference matters most in the outer areas of a station's usable coverage area, especially for mobile listeners. A station's automotive audience wants interference-free service, for as long as possible wherever they may be driving. And LPFM stations are not a substitute radio source for mobile audiences. As the Commission recognized long ago, "[s]ince a significant proportion of the automotive audience is likely to be located in the urban fringes, or is likely to be traveling between large cities, it is most desirable to establish transmitting facilities of sufficient height and power to make it unnecessary for the automotive listener to change stations every few miles."⁷⁰ Low power FM stations, the Commission has recently concluded, simply "cannot adequately serve . . . mobile audiences."⁷¹

Moreover, as the NAB shows in its Comments in this proceeding, the FM Receiver Interference Study conducted by Carl T. Jones Corp. demonstrates that, for the median receiver currently on the market, the existing third adjacent channel interference standard is just adequate. Any reduction in, let alone elimination of, the third adjacent channel interference protection criteria will result in unacceptable degradation of the desired station's signal. Because the typical consumer radio will experience objectionable interference, the Commission cannot attempt to squeeze in LPFM stations simply by reducing or eliminating the third adjacent channel interference protection

⁷⁰ *Revision of FM Broadcast Rules*, Third Report, Memorandum Opinion and Order, FCC 63-735, 23 Rad. Reg. (P & F) 1859 (1963), at ¶ 9.

⁷¹ *Stephen Paul Dunifer*, FCC 95-333, 1 Comm. Reg. (P & F) 798 (1995), at ¶ 15.

criteria—at least without seriously harming existing service.⁷²

In fact, eliminating even third adjacent channel interference protection for LPFM purposes is contrary to the Commission’s long-standing and statutorily-mandated policy of managing the broadcast spectrum to prohibit destructive interference.⁷³ Moreover, if third adjacent channel interference protection were really not necessary from a technical integrity standpoint, it would be much more spectrally efficient to permit full power stations to be assigned accordingly or, for existing licensees, to permit them to modify their facilities to take advantage of this relaxation in the rules—first, before LPFM stations are authorized.

The *Notice* observes that “[t]he paucity of major market LPFM spectrum under our current rules testifies to the aggressive efforts of existing broadcasters to maximize service. Principally for this reason, we are disinclined to extend reduced second- and third-adjacent channel protection standards to full power FM stations.”⁷⁴ Why should full power broadcasters be penalized for conferring a public benefit by maximizing service and being more spectrally efficient? As the Commission has previously stated: “We believe that it is good public policy for our technical allotment and assignment requirements to be based upon reasonably derived and consistently applied

⁷² See NAB Comments, FM Receiver Interference Test Results Report.

⁷³ See, e.g., *Amendment of Part 73 of the Rules to Provide for an Additional FM Station Class (Class C3) and to Increase the Maximum Transmitting Power for Class A FM Stations*, Memorandum Opinion and Order, FCC 91-128, 69 Rad. Reg. 2d (P & F) 303 (1991) (“*Reconsideration of Second Report and Order*”), at ¶ 3 (stating that “a basic premise . . . is that no interference is permitted”); *Grandfathered Short-Spaced FM Stations*, Report and Order, FCC 97-276 (released Aug. 8, 1997), at ¶ 25 (reiterating that “we have no intention of relaxing second-adjacent-channel and third-adjacent channel spacing requirements as allotment and application criteria”).

⁷⁴ *Notice* at ¶ 50.

technical standards.”⁷⁵ Either third adjacent channel interference protection is necessary or it is not. For that matter, the same can be said of second adjacent channel interference protection. The Commission cannot simply decree that it desires to amend the laws of physics. Accordingly, NCAB and VAB do not believe the Commission’s distinction that LPFM stations warrant elimination of current protection standards because they have lower power levels withstands scrutiny, especially in a context in which numerous LPFM stations will be crammed into the usable 34 dBu or 40 dBu service areas of full power stations.

Furthermore, the Commission’s concern that, were the interference standards relaxed for full power stations, the “opportunities for low power stations would diminish as existing broadcasters move quickly to improve their own facilities”⁷⁶ is facile. Shouldn’t existing broadcasters *improve* their facilities? NCAB and VAB seriously question whether there can be any rational basis to protect what amounts to a secondary service, for the vast majority of LPFM stations will be LP100 and LP10 stations, against service improvements initiated by providers of the primary service.

To reiterate, NCAB and VAB believe that the technical integrity of the FM band cannot withstand the elimination of even third adjacent channel interference protection, let alone second adjacent channel interference protection. However, should the Commission determine that these protection standards no longer serve a purpose from a physical standpoint, then the Commission’s own precedent requires that its technical standards be applied uniformly. If third (and second) adjacent channel interference protections are to be eliminated, then existing full power broadcasters,

⁷⁵ *Review of Technical Parameters for FM Allocation Rules (Distance Separations for IF-Related FM Stations)*, Third Report and Order, FCC 89-62, 66 Rad. Reg. 2d (P & F) 116 (1989), at ¶ 18.

⁷⁶ *Notice* at ¶ 50.

the primary providers of radio services, should be permitted to improve their facilities first, before the essentially secondary service of LPFM is even authorized.

V. Engineering Analyses Demonstrate the Irrationality of the Current LPFM Proposals

NCAB and VAB have had Graham Brock, Inc., Broadcast Technical Consultants, perform a spectrum availability analysis for LP1000 and LP100 stations for five cities in North Carolina—Charlotte, Greenville, Hope Mills, Louisburg, and Roxboro—and six cities in Virginia—Charlottesville, Gloucester, Manassas, Richmond, Roanoke, and Staunton.⁷⁷ The Commission in the *Notice* provided the results of its own spectrum availability analysis which included three North Carolina cities—Charlotte, Greenville, and Raleigh—and one Virginia city—Richmond.⁷⁸ The Commission's methodology utilized a coordinate grid laid over each city, and it made assignments at the most preclusive grid locations. Graham Brock's methodology, by contrast, selected one specific point in each city and determined the preclusive effects of existing stations on the availability of that site as the site for low power stations. In the case of Charlotte, North Carolina's largest city, the city center was chosen in order to determine the potential number of low power stations that could broadcast from the center of the state's largest urban market. In the cases of Roanoke and Staunton, Virginia, the city center was also chosen as these cities are located in mountainous terrain and certainty of coverage over the city was desired. In the case of the remaining cities, an existing transmitter site was chosen because it is already known that the site is available without being limited by environmental considerations, zoning restrictions, or proximity

⁷⁷ These analyses are provided as attachments to Exhibit 1.

⁷⁸ See *Notice*, Appendix D.

to airports.

Graham Brock's studies considered three cities the Commission had analyzed, Charlotte and Greenville, North Carolina, and Richmond, Virginia, for comparison purposes, and they also considered three much smaller North Carolina towns—Hope Mills, with a population of 9798; Louisburg, with a population of 3289; and Roxboro, with a population of 7497—and five medium-sized Virginia towns—Charlottesville, with a population of 38,223; Gloucester, with a population of 35,081; Manassas, with a population of 35,336; Roanoke, with a population of 93,749; and Staunton, with a population of 23,346.⁷⁹ Overall the towns are spread geographically around the two states. Graham Brock's analyses examined only the 80 commercial FM channels and did not protect translators.

The combined results of the Commission and Graham Brock studies are contained in the accompanying tables. As the two tables show, the Commission's estimate of the number of potential LP1000 and LP100 stations that could be assigned in each city appears to significantly understate the true number of stations that are likely to become available, especially if second and third adjacent channel interference protections are eliminated for LPFM purposes. For example, in the case of Charlotte, the Commission determined that no LP1000 or 3 LP1000 stations could be sited in Charlotte across the entire FM band if third adjacent channel interference protection or if second and third channel interference protections, respectively, were eliminated. However, Graham Brock determined, across only the non-reserved band, that 2 LP1000 and 9 LP1000 stations, respectively, were potentially available just from the city center.

⁷⁹ All population figures are 1998 Census Bureau estimates. The population for Gloucester, Virginia, is county-wide.

Number of Potentially Available LP1000 Stations
North Carolina and Virginia

Table 5

City/Site	Number of stations if FULL second and third adjacent channel interference protection	Number of stations if NO <i>third</i> adjacent channel interference protection	Number of stations if NO <i>second</i> and <i>third</i> adjacent channel interference protection
<i>Charlotte, NC</i>			
FCC	0	0	3
City Center	0	2	9
<i>Greenville, NC</i>			
FCC	2	3	5
WCZI Tower	1	2	9
<i>Hope Mills, NC</i>			
WCCG Tower	1	4	9
<i>Louisburg, NC</i>			
WYRN Tower	4	7	13
<i>Raleigh, NC</i>			
FCC	0	0	3
<i>Roxboro, NC</i>			
WKRX Tower	0	1	6
<i>Charlottesville, VA</i>			
WQMZ Tower	3	5	10
<i>Gloucester, VA</i>			
WXGM Tower	1	2	6
<i>Manassas, VA</i>			
WJFK Tower	0	0	0
<i>Richmond, VA</i>			
FCC	3	8	18
WJRV Tower	0	4	11
<i>Roanoke, VA</i>			
City Center	2	5	12
<i>Staunton, VA</i>			
City Center	3	6	16

Number of Potentially Available LP100 Stations
North Carolina and Virginia

Table 6

City/Site	Number of stations if FULL second and third adjacent channel interference protection	Number of stations if NO <i>third</i> adjacent channel interference protection	Number of stations if NO <i>second</i> and <i>third</i> adjacent channel interference protection
<i>Charlotte, NC</i>			
FCC	1	1	13
City Center	2	7	18
<i>Greenville, NC</i>			
FCC	6	7	12
WCZI Tower	5	7	17
<i>Hope Mills, NC</i>			
WCCG Tower	3	12	18
<i>Louisburg, NC</i>			
WYRN Tower	4	11	20
<i>Raleigh, NC</i>			
FCC	0	1	9
<i>Roxboro, NC</i>			
WKRX Tower	1	6	18
<i>Charlottesville, VA</i>			
WQMZ Tower	5	12	22
<i>Gloucester, VA</i>			
WXGM Tower	5	8	15
<i>Manassas, VA</i>			
WJFK Tower	0	0	6
<i>Richmond, VA</i>			
FCC	8	24	59
WJRV Tower	2	5	18
<i>Roanoke, VA</i>			
City Center	3	8	20
<i>Staunton, VA</i>			
City Center	5	10	22

Again, in the case of Charlotte, the Commission determined that only 1 LP100 or 13 LP100 stations could be sited in Charlotte across the entire FM band if third adjacent channel interference protection or if second and third channel interference protections, respectively, were eliminated. However, Graham Brock determined, across only the non-reserved band, that 7 LP100 and 18 LP100 stations, respectively, were potentially available just from the city center.

Similar underestimates on the Commission's part are seen in the case of Greenville for both LP1000 and LP100 stations. However, the Commission and Graham Brock studies are in close agreement, both for LP1000 and LP100 stations, if full interference protection is maintained from second and third adjacent channels.

The case of Richmond is particularly remarkable. Although Richmond is situated in Zone I, and, as shown above, in an especially interference-riddled area, the Commission's own calculations would place as many as 18 LP1000 stations and 59 LP100 stations in its vicinity, if both second and third adjacent channel interference protections are eliminated. These numbers are far greater than the number of LPFM stations that could be allocated to any but just a few far western cities such as Las Vegas, Nevada, and Albuquerque, New Mexico, and certainly far exceed the numbers for any city east of the Mississippi River. It is simply incredible to contemplate that Richmond, with a 1998 population of 194,173, could possibly be the home of 59 new LP100 stations. Graham Brock's independent analysis from a single site shows fewer LP1000 and LP100 stations would be available than the Commission's extraordinary analysis shows, but the numbers are still significant and fully in line with the analyses for the other cities.⁸⁰

The case of Manassas, Virginia, is also surprising. As discussed above, WJFK(FM) operates

⁸⁰ Graham Brock's analysis also only considered potential LPFM stations in the non-reserved band, in contrast to the Commission's which examined all 100 channels.

in the third “worst case” interference environment in the country. Nearly 42% of its area and nearly 30% of its population are lost due to interference within its protected contour. Nevertheless, if second and third adjacent channel interference protections are eliminated, up to 6 new LP100 stations could be dropped in at WJFK’s tower site in just the non-reserved band!

The results of these studies are disturbing. On the one hand, without relaxing second and third adjacent channel interference protection standards, not enough new LPFM stations, especially LP1000 stations, can be shoehorned in to make the concomitant bureaucratic effort worthwhile, notwithstanding the host of technical difficulties and threat to spectrum integrity the LPFM proposals present.⁸¹ The Commission virtually concedes as much in the *Notice*.⁸² Moreover, very few LPFM stations can be assigned to the largest markets. The Commission’s own analysis shows that in 18 of the 20 largest markets (those with populations greater than 500,000), **no** LP1000 *or* LP100 stations—zero—can be assigned whatsoever if current interference protection standards are maintained and translators are protected.⁸³ This analytical result demonstrates that the Commission’s goal of “serving urban communities and neighborhoods” by means of LPFM stations—as stated prominently in the *Notice*’s very first paragraph—cannot be achieved, *ab initio*.⁸⁴

⁸¹ From the engineering analyses examined here, it appears that, on average, only 1 LP1000 and only 3 LP100 stations could be sited in each city if full second and third adjacent channel interference protections are maintained.

⁸² *See Notice* at ¶ 48 (“The inclusion or exclusion of 2nd-adjacent channel protection requirements for LPFM stations would greatly affect the extent to which LPFM service could be introduced and, therefore, . . . we would prefer not to adopt any such requirements for LPFM stations.”).

⁸³ *See Notice*, Appendix D.

⁸⁴ *Notice* at ¶ 1. *Cf.* Dissenting Statement of Commissioner Furchtgott-Roth at 1 (observing that “very little new service would be created in the major urban markets at which this proposal is (continued...)”).

On the other hand, if second and third adjacent interference protection standards are eliminated for LPFM purposes, then thousands of new LPFM stations could be assigned throughout the country, especially if translators are not protected and microradio LP10 stations are thrown into the mix. Indeed, the engineering studies indicate that as many as 111 LP1000 and 244 LP100 stations could be situated in the non-reserved band in just the 12 cities scattered across North Carolina and Virginia examined here—and North Carolina and Virginia are already amongst the most difficult interference environments in the entire country. This represents an average of 9 LP1000 stations and 20 LP100 stations in each city, some of which are very small towns indeed. It is possible that, nationwide, the number of FM stations, already totaling more than 7750, could increase by 50% or more⁸⁵—and this at a time when hundreds of existing allotments lie fallow and hundreds of other radio stations can be purchased for less than the cost to build a new one. It is simply incredible to contemplate that the Commission seriously seems to believe that the enormous

⁸⁴(...continued)
in significant part aimed”).

⁸⁵ Nevertheless, it clear that, notwithstanding the possible creation of several thousand new LPFM stations, not everyone who may want one will be able to have one. *See Notice* at ¶ 11 (stating that the Commission received more than 13,000 inquiries in the last year from individuals and groups interested in starting a low power radio station).

NCAB and VAB question, however, whether the interest allegedly shown in low power radio stations is nearly as great as the Commission apparently believes. The Commission supports its 13,000 inquiry figure by stating that the Commission’s low power radio website averaged more than 1000 “hits” each month. *See id.* at ¶ 11 n.26. But the number of hits a site such as this gets is meaningless. It is a very simple matter for even one individual to have generated nearly all of the hits. Even without a single individual purposely attempting to inflate the hits the website generates, the vast majority of the hits could still be the result of a small, but ardent, group of low power radio proponents checking the site daily for updates. In fact, and to the contrary, counsel for NCAB and VAB have visited the website more than a dozen times in the last year for monitoring purposes, and the Commission would be quite mistaken in assuming that these hits mean that NCAB, VAB, or its counsel are interested in starting a low power station, let alone that those hits mean that 12 separate individuals or groups are.

“Swiss cheese” effect created by dropping in thousands of new LPFM stations will not destroy existing FM radio as we know it. Indeed, full implementation of the Commission’s proposals will so nibble away at existing useful service that *there will be more holes than cheese!*

In fact, it is not rational for the Commission to cast spectrum integrity to the winds and implement any sizable LPFM assignment plan. The Commission has admitted as much in the past. In creating the modern FM broadcasting service, the Commission declared: “With respect to matching the number of existing AM stations, which is nearly 4000, this is not possible under our present mileage provisions, and it is questionable whether any *reasonably conceivable* shortening of separations would lead to a figure approaching 4000.”⁸⁶ By creating new classes of stations with shorter spacing requirements—but maintaining full adjacent channel interference protections—the Commission has jiggered an allotment scheme in which there are more than 5700 commercial FM stations. The current FM band is now stuffed and congested. It is not reasonably conceivable that thousands of the new LPFM stations—a number made possible only by abandoning those long-standing adjacent interference protection standards—can be fitted in without degrading the whole scheme. The result would be the AM-ization, or, worse, the CB-ization, of the FM service.

Moreover, the Commission has also previously stated:

Since it is *impossible*, under *any rational* assignment plan, to put individual stations in more than a small percentage of the many suburban communities clustered around our larger cities, we must try to see that as many of the central city stations as possible will be able to cover all of the surrounding suburbs.⁸⁷

⁸⁶ *Revision of FM Broadcast Rules*, Second Further Notice of Proposed Rule Making, FCC 62-1340 (1962), at ¶ 8 n.3 (emphasis added).

⁸⁷ *Revision of FM Broadcast Rules*, Third Report, Memorandum Opinion and Order, FCC 63-735, 23 Rad. Reg. (P & F) 1859 (1963), at ¶ 9 (emphases added).